Work Order ID September-13-12 2:53:			*901	95*						Page 1
Item ID: D212-	664-207		Accept	*N900	040	100)* s	Setup _, Start	*N	S1*
	be Low Standard Aft	•				•	•	Stop	*N	S2*
Start Date: 9/17/12 Required Date: 10/12/		*1 *1	*	Cust Item I Customer:	D:			:		
Reference: Approvals: Proce	ess Plan: MLJ	Date: \7C	79-17 Tooling:	Da	ate:	<u></u>	· . F	Run Start Stop	"IV	R1*
QC:		Date:	SPC (Y/N):	D:	ate:			. Stop	*N	R2*
Sequence ID/ Work Center ID	Operation Description	*.	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr		₽ Ş Ş							• • .
D212-664-247	Rev B (DEO)		(a))				*	2	
*100 *100*	DOCUMENT CONTRO	rL	0.00	.3) .		- 4 404	*	Lor me	JZ	2-10-3
Document Control	Memo Photocopy b	oluefile and create l	abels as per PPP D212-664-207	CHG002		'			٠	
	1911	ع ند	•							
110.	Pick Kit		0.00							
110	Packaging			·	-	•	MO	121	10/1	7
Packaging	Memo		0.00							

0.00 120 BENDING MACHINE - CROSSTUBES *120* CNC Bend 2

0.00 Memo

Bend tube as per Dwg D212-664-247 using CNC bender program CNC Alpha 160 Bender and Folio

										DQA:	Date:	
NCR: Yes	/ No			W	ORK ORDER NON-C	ONI	FORM	MANCE / UP		QA Closed:	Date:	~ ;
Work Order:					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
Part No.					Rework Scrap Use-as-is Work Order Update		1	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Description	of work order update	In	itial	Ac	tion	Sign &		
Cause	Date	Step	Qty	or No	n-conformance	Chie	f Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							•	· .				

Landin	g Gear	 General				
	Bending	Bend		Grain	Ovalized	Pressure/Forced
	Centre Not Concentric to O/S	BOM/Route		Hardware	Over/Under tolerance	Temperature/Cure
	Cracks	Broken/Damaged		Inspection Incomplete	Part Incorrect	Weld
	Crushed/Crimped_	Burrs		Instructions Incomplete/Unclear	Part Lost/Missing	Wrong Stock Pulled
	Cuffs	Contamination		Maintenance	Part Moved	
	Heat Treat	Countersink		Mislabeled	Positioned Wrong	 _
	Inspection Strip in Tube	Cut Too Short		Misread	Power Loss/Surge	Other
	Ripples in Bend	Drill Holes		Offset		
	Torque Waves in Extrusion	Drawing	Г	Out of Calibration		_
	Turning Sequence	Finish		Out of Sequence	<u> </u>	
	Wave/Twist in Tube	Folio		Outside Dimensions		

FAULT CATEGORY

:Work Order ID 90195 Page 2 September-13-12 2:53:02 PM D212-664-207 Accept Item ID: *N900040100* Setup Start **Revision ID:** Stop Crosstube Low Standard Aft Item Name: **Start Date:** 9/17/12 Start Qty: 1.00 **Cust Item ID:** Req'd Qty: 1.00 Required Date: 10/12/12 **Customer:** Reference: Run **Process Plan:** Date: Tooling: Approvals: Date: Stop SPC (Y/N): Date: QC: Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Insp. **Work Center ID** Description **Run Hours** Code Qty Qty Number Stamp 130 QC15- Crosstube Dimensional Check *130* QC Memo Quality Control 140 0.00 Crosstubes *1*1*10* 0.00 Crosstubes Memo ****** ENSURE PROPER JIG POSITIONING ******** Crosstubes 12-10-19 1-Drill Rivet holes as per Dwg D212-664-247 using DT8972.***Use T-Pin*** 2-Drill pilot holes in tube as per Dwg D212-664-247 using DT8550 and DT8551 3-Ream hole to finish size in tube as per Dwg D212-664-247 17-10-27 4-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-247

125

5-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-247

NCR: Y	es / No				WORK ORDER NON-O	CON	IFORM	MANCE / UP	DATE			
	•				•					QA Closed:	Date:	
Work Orde	r:				DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
Part N					Rework Scrap Use-as-is		4	Skid-tube Machining noforming	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor. e/Packaging	Engineering Quality Other
NCR N	lo				Work Order Update	1	mem	Large Fab	Composite	, necy stor	Supplier	
Root				Descri	ption of work order update	lı	nitial	Ac	tion	Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Chi	ef Eng	Desc	ription	Date	Verification	QC Inspector
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Equip/Tooling	_			!								
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Process	-											
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onapproved 1			<u> </u>	i	F	AUL.	T CATE	GORY		.1		
Landir	ng Gear				General				 			
	Bending				Bend		Grain			Ovalized		Pressure/Forced
<u> </u>	Centre No	ot Concer	ntric to	o/s	BOM/Route	П	Hardwa	are		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
	Crushed/	Cracks Broken/Damaged Crushed/Crimped. Burrs				П	Instruct	tions Incomplete/	Unclear	Part Lost/M	issing	Wrong Stock Pulled
Ī	Cuffs						Mainte	enance		Part Moved		_
[Heat Treat Countersink				Countersink		Mislabe	eled		Positioned \	Vrong	
	Inspection Strip in Tube Cut Too Short				Cut Too Short		Misrea	d		Power Loss/	Surge	Other
	Ripples in Bend Drill Holes				Drill Holes		Offset					
[Torque W	/aves in E	xtrusio	n 🗌	Drawing		Out of	Calibration	•			
	Turning S	equence			Finish		Out of	Sequence				

Outside Dimensions

DQA:

Date:

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Wave/Twist in Tube

Outsource process - NDT

Page 3

September-13-12 2:53:02 PM D212-664-207 Accept Item ID: Setup Start *N900040100* **Revision ID:** Item Name: Crosstube Low Standard Aft **Start Date:** 9/17/12 Start Qty: 1.00 **Cust Item ID:** Required Date: 10/12/12 Req'd Qty: 1.00 **Customer:** Reference: Run Start **Approvals: Process Plan:** Date: **Tooling:** Date: Stop SPC (Y/N): Date: _____ Date: **Tool ID** Sequence ID/ Operation Set Up/ Tool # Plan Accept Reject Reject Insp. Qty Stamp **Work Center ID** Description **Run Hours** Code **Qty** Number 150 QC5- Inspect part completeness to step on W/O 0.00 *150* QC 0.00 Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Quality Control 0.00 160 *160* HandFXtube 0.00 Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Hand Finishing Crosstubes 1- CLEAN CROSSTUBE WITH WASH'N WIPE Outsource process - NDT per QSI038 4.1 0.00 180 Al 12-10-23 *180* Outsource2 0.00 Memo

Liquid Penetrant Inspection as per QSI 038
Issue P/O: 122 PI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

											DQA:	Date:	
NCR:	⁄es	/ No				WORK ORDER NON-	100	NFORM	ANCE / UPD	ATE	•		:
		•									QA Closed:	Date:	
Work Orde						DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
Work Orde	٥.					Rework	1		Skid-tube	Crosstube		Water Jet	Engineering
Part N	۱o. ِ					Scrap		1	Machining	Small Fab	4	d. Eng. Coor.	Quality
***						Use-as-is	-		oforming	Finishing	Rec/Stor	re/Packaging	Other
NCR N	١٥.	<u> </u>		·		Work Order Update	َ ل		Large Fab	Composite	j	Supplier	
Root	- 1				Descri	ption of work order update		Initial	Acti	on	Sign &		
Cause		Date	Step	Qty	C	or Non-conformance	Cł	nief Eng	Descri	ption	Date	Verification	QC Inspector
Doc/Data													
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Operator		4	i										
Material													
Setup													
Other						,··`	ŀ						
Process				Ti-	*								
Supplier													
Training													
Unapproved													
						<u> </u>	AUI	LT CATE	GORY				
Landi	ng (Gear				General		_			_		_
		Bending			L	Bend		Grain			Ovalized		Pressure/Forced
 		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re	L.	Over/Under	tolerance	Temperature/Cure
		Cracks			L	Broken/Damaged	L	Inspecti	on Incomplete		Part Incorre	ct	Weld
9		Crushed/	ushed/Crimped. Burrs					Instruct	ions Incomplete/U	nclear	Part Lost/M	issing	Wrong Stock Pulled
		Cuffs		Contamination				Mainte	nance		Part Moved		
		Heat Trea	at			Countersink		Mislabe	led		Positioned \	Wrong	_
		Inspection	n Strip in	Tube		Cut Too Short		Misread	I		Power Loss,	'Surge	Other
		Ripples in	Bend			Drill Holes		Offset			-		

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

90195

Page 4

September-13-12 2:53:02 PM D212-664-207 Accept Item ID: *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Low Standard Aft Start Date: 9/17/12 Start Qty: 1.00 **Cust Item ID:** Required Date: 10/12/12 Req'd Qty: 1.00 **Customer:** Reference: Run Start Approvals: Process Plan: Date: **Tooling:** Date: Stop Date: SPC (Y/N): QC: Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Reject Accept Reject Insp. Work Center ID **Description** Code Qty **Qty Run Hours** Number Stamp 190 Receive & Inspect for Damage & Mat'l Certs 0.00 Packaging 0.00 **Packaging** Memo Packaging *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Ensure copy of NDT results attached to work order. 200 QC5- Inspect part completeness to step on W/O 0.00 0.00 Memo Quality Control *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D212-664-207 204 Crosstubes Chemical Conversion 0.00 Ten 12-10-24 0.00 HandFXtube Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Hand Finishing Crosstubes 1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE AND CUFF BEFORE CHEMICAL CONVERSION

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											DQA.	Date	
NCR:	⁄es	/ No				WORK ORDER NON-O	CON	NFOR	//ANCE / UPDATE		QA Closed:	Date	•
				-	<u>-</u>	DISPOSITION			AG	GAINST DEF			
Work Orde	er: _					,	ı İ		ctulation			Water Jet	
Part N	۷o					Rework Scrap Use-as-is		ľ	Machining Sm	nall Fab nishing		d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR N	No					Work Order Update			~ —	nposite		Supplier	
Root	П				Descri	ption of work order update		nitial	Action		Sign &		
Cause		Date	Step	Step Qty or Non-conformance				ief Eng	Description	١	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator													
Material													
Setup			İ										
Other													
Process				17r			1						
Supplier			1						43				
Training													
Unapproved													
						F	AUI	LT CATE	GORY				
Landį	ng G	iear				General	<u></u>	7			l.	_	_
	Ц	Bending	nding Bend					Grain		⊢	Ovalized		Pressure/Forced
	Ш	Centre Not Concentric to O/S BOM/Route						Hardwa	re		Over/Under		Temperature/Cure
	Ш	Cracks		Broken/Damaged		-i `	ion Incomplete		Part Incorre	- -	Weld		
	Ш	Crushed/	Crimped.			Burrs		-	ions Incomplete/Unclea		Part Lost/M	_	Wrong Stock Pulled
	Ш	Cuffs				Contamination		Mainte	enance		Part Moved		
	1 1	HeatrTrea	·+		[Countersink	1	Mislahe	hala	l	Positioned V	Mrong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

DO 4 .

Power Loss/Surge

Other

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish

Work Orde September-13-12				*901	195*							Page 5
Item ID: Revision ID:	D212-664-2	207		Accept	*N90	0040	100)*	Setup	Start	*N.	S1*
	Crosstube Lo	w Standard Aft								Stop	*N.	S2*
Start Date:	9/17/12	Start Qty: 1.00	*1*		Cust Iten	n ID:						
Required Date:	10/12/12	Req'd Qty: 1.00	*1*		Custome	r:						
Reference:			·									
Approvals:	Process Pl	an:	Date:	Tooling:		Date:	- 0		Run	Start	*N	R1*
	QC:		Date:	SPC (Y/N):		Date:				Stop	*N	R2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accep Qty	t Re Qt		Reject Number	Insp. Stamp
206		QC7-Inspect Chemical C	Conversion Coat	0.00								
206 QC Quality Control		Memo *** WEAR	LATEX GLOVES WHE	0.00 N HANDLING CROSSTU	JBE*** (AS)	12/16/26						~
						10 (00 (0)						
210				0.00								
210		Crosstubes						1		Ø	Ø	A.J
Crosstubes		Memo		0.00								12-10-25
Crosstubes		*** WEAR	LATEX GLOVES WHE	N HANDLING CROSSTU	JBE***							
•			assemble Cuffs with T-P 47. with Sika flex in Bet	in in the through bolt hole ween tube & Cuff	s as per Dwg						a	

A/R SIKAFLEX -241/-291 BATCH: 19.3025

											DQA:	Date	
NCR:	/es	/ No				WORK ORDER NON-C	O	VFORM	MANCE / UPI	DATE			:
		•							-		QA Closed:	Date	•
Work Orde	ar.				" "	DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part N	٠ . No.					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	1	Initial	Act	tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	nief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved						eng s			·				
						F.	AUL	LT CATE	GORY				
Landi	Landing Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short					Bend BOM/Route Broken/Damaged Burrs Contamination Countersink		- 1 '	ion Incomplete ions Incomplete/ enance eled	Unclear	Ovalized Over/Unde Part Incorre Part Lost/M Part Moved Positioned Power Loss	ect lissing Wrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
		Ripples in	Bend			Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME:

Start Time: 760
Fininsh Time: 860

PAINT:

Start Time: 3100 Finish Time: 41.00

											DQA:	Date	e:	
NCR:	Yes	/ No				WORK ORDER NON-	CO	NFORM	MANCE / UPDATE		•		_	:
											QA Closed:	Dat	e:	
Work Orde	or.					DISPOSITION			AGAIN	ST DE	PARTMENT	PROCESS		
Part f	No.		-			Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Crosstu Machining Small F noforming Finishi Large Fab Compos	ab ng	1	Water Jet d. Eng. Coor. re/Packaging Supplier		Engineering Quality Other
Root					Descri	ption of work order update	I	Initial	Action		Sign &			
Cause		Date	Step	Qty	C	or Non-conformance	Ch	nief Eng	Description		Date	Verification		QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved														
	٠.						AUI	LT CATE	GORY					
Landi	anding Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	on Incomplete ions Incomplete/Unclear enance eled		Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N Power Loss	ct issing Wrong		Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
l	1	Ripples in	Bend		1	Drill Holes		Offset						

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper,

Batch: 123 103

2-Install supports with Proseal 890 per DSI9563 and QSI 015

clean the area with 4105S wash 'n' wipe

A/R Proseal 890 B
3- Torque bolts as per dwg

											DQA:	Date	e :
NCR:	Yes	/ No				WORK ORDER NON-C	100	NFORM	AANCE / UPDAT	E	·		:
									<u> </u>		QA Closed:	Date	e:
Work Ord	or.					DISPOSITION			A	GAINST DEF	PARTMENT	PROCESS	
Part f	No.			-		Rework Scrap Use-as-is Work Order Update		f Therm	Machining Sr noforming F	osstube mall Fab inishing mposite		Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
Root						ption of work order update	1	nitial	Action		Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Description	n	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
	٠ ــــ						AUL	T CATE	GORY			· · · · · · · · · · · · · · · · · · ·	
Landi	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube				o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	on Incomplete ions Incomplete/Unclea enance eled		Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled
		Ripples in	Bend			Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Quality Control

Memo

90195

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September-13-12 2:53:02 PM D212-664-207 Accept *N900040100* Item ID: Setup Start **Revision ID:** Item Name: Crosstube Low Standard Aft 9/17/12 Start Qty: 1.00 Start Date: **Cust Item ID:** Req'd Qty: 1.00 Required Date: 10/12/12 **Customer:** Reference: Run Process Plan: _____ Date: ____ **Tooling:** Approvals: Date: Stop _____ Date: ____ SPC (Y/N): Date: Sequence ID/ Set Up/ **Operation** Tool ID Tool # Plan Accept Reject Reject Insp. Work Center ID **Description** Code Qty Qty Number Stamp Run Hours 250 QC5- Inspect part completeness to step on W/O 16, 17/10/70 *250* 0.00 Memo Quality Control Pick Kit 0.00 255 10/1/30 (U) *955* 0.00 Packaging Memo Packaging QC4-100% Inspect kits for completeness 260 *260*

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NCR:	⁄es	/ No				WORK ORDER NON-C	:01	NFORN	MANCE / UPI	DATE		-		-	
											(QA Closed:	Dat	te:	
Work Orde	∍r·					DISPOSITION				AGAINST DE	EΡ	ARTMENT/	PROCESS		
Part N	-					Rework Scrap		r	Skid-tube Machining	Crosstube Small Fab Finishing	1		Water Jet d. Eng. Coor. e/Packaging		Engineering Quality Other
NCR I	No					Use-as-is Work Order Update			noforming Large Fab	Composite	<u> </u>	Rec/Stor	Supplier	-	Other
Root					Descri	ption of work order update		Initial	Act	tion	T	Sign &			
Cause		Date	Step	Qty	(or Non-conformance	Ch	ief Eng	Desc	ription	1	Date	Verification	n	QC Inspector
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Landi	ng G	ear				General		_		_	_				•
		Bending				Bend		Grain				Ovalized		L	Pressure/Forced
		Centre Not Concentric to O/S BOM/Route						Hardwa	re			Over/Under	tolerance		Temperature/Cure
	Cracks Broken/Damaged					Broken/Damaged		Inspecti	on Incomplete			Part Incorre	ct		Weld
	Crushed/Crimped. Burrs					Burrs		Instruct	ions Incomplete/	Unclear		Part Lost/Mi	ssing		Wrong Stock Pulled
	Cuffs Contamination					Contamination		Mainte	enance		٦	Part Moved			_
						Countersink		Mislabe	eled		٦	Positioned V	Vrong		
		Inspection	n Strip in	Tube		Cut Too Short		Misread	d		1	Power Loss/	Surge		Other

Offset

Out of Calibration
Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish Folio

Work Orde September-13-12					*901	195*						Page 9
Item ID: Revision ID:	D212-664-2			. =	Accept	*N900	0401	೧೧ *	Setup	Start Stop	*NS	1*
Item Name: Start Date: Required Date: Reference:	9/17/12	Start Qty: 1.00 Req'd Qty: 1.00		1* 1*		Cust Item II Customer:	D:				*NS	2*
Approvals:	Process Pl	an:	Date:		Tooling:	Da	nte:		Run	Start	*NR	1*
	QC:		Date:		SPC (Y/N):	Da	ıte:			Stop	*NR	2*
Sequence ID/ Work Center II 270 *270*	D	Operation Description Packaging		-	Set Up/ Run Hours	Tool ID		lan Accer ode Qty	ot Re Qt	-	-	nsp. tamp
Packaging Packaging		Memo Identify an	d pack for shipp	oing as per P	0.00 PP D212-664-207	4 3					191701	21-24
280 * 20 0*		QC21- Final Inspection	- Work Order Re	elease	0.00					12	110/3	1 HA

0.00

Memo

Quality Control

V10-31

											DQA	: Date	:
NCR: \	⁄es	/ No				WORK ORDER NON-O	CON	NFORN	ANCE / UPI	DATE			:
		•									QA Closed	: Date	:
Work Orde	~ r·				-	DISPOSITION				AGAINST DE	PARTMEN	T/PROCESS	
Work Orde	د ا . ـــ		-			Rework	1		Skid-tube	Crosstube]	Water Jet	Engineering
Part N	No.					Scrap	1		Machining	hining Small Fab Prod. Eng. Coor.			
						Use-as-is]		Thermoforming Finishing Rec/Store/Packaging Large Fab Composite Supplier				Other
NCR N	No					Work Order Update]		Large Fab	Composite]		
Root					Descri	ption of work order update	ı	nitial	Act	ion	Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator	Ш												
Material	Ш												
Setup	Ц												
Other	Ш												
Process							۱.						
Supplier													
Training													
Unapproved													
						F	AUL	T CATE	GORY				
Landi	ng G	ear				General				_	-	_	
		Bending				Bend		Grain			Ovalized	L	Pressure/Forced
	Centre Not Concentric to O/S				o/s	BOM/Route		Hardwa	re		Over/Und	er tolerance	Temperature/Cure
	LJ ⁽	Cracks			`	Broken/Damaged	L	Inspecti	on Incomplete		Part Incor	rect	Weld
	Ц́	Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/	Unclear	Part Lost/I	Missing	Wrong Stock Pulled
	∐'	Cuffs				Contamination		Mainte	nance		Part Move	d	
		Heat Trea	it			Countersink		Mislabe	led		Positioned	l Wrong	
		nspectio	n Strip in	Tube		Cut Too Short		Misread	i		Power Los	s/Surge	Other
	Inspection Strip in Tube Ripples in Bend					Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Picklist Print

September-13-12 2:53:02 PM

Work Order ID:

90195

Parent Item:

D212-664-207

Parent Item Name:

Crosstube Low Standard Aft

Start Date: 9/17/12

Required Date: 10/12/12

Page 1

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A New Issue 07.09.12 EC verified by: JLM IPP Rev:B ECN 1100p 08-01-11 DD verified by: EC

IPP Rev:C ECN 1121 08-02-25 DD verified by:eC

IPP Rev: D QC5 replaced by QC15 at step 5 KJ Verified by: ec

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-207TRNRevA		Manufactured	No			110	Each	0.0000	1	(1)	Ma	5	12/10
Crosstube Turning Detail D3660-1 CUFF		Manufactured	No	Bo	70956	140	Each	20.0000	2	2			-110
				Location LG B 87445 80359		Loc Oty L 2 2		oc Code		2			12/10/
				ST477 874	445	10 10							
				ST482 533		8							
					983 394	6							
C R3212-4-06 CHERRY RIVET		Purchased	No			220	Each	752.0000	44	44	Af	12-	10-25
				Location		Loc Qty	Lo	oc Code					
				ST329	2378	459 459				14			
				ST330	0521	240 40							
					2141	200							
				ST331	2492	53							
				113	2492 2794 9717	18 8 27							

NCR:	NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE													
										QA Closed:	Date:			
Work Orde	er:			·		DISPOSITION			AGAINST [DEPARTMENT,	PROCESS	_		
Part N	•					Rework Scrap Use-as-is	Skid-tube Crosstube Machining Small Fab Thermoforming Finishing				Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other		
NCR 1	۱o.					Work Order Update	ן נ		Large Fab Composite _	Supplier				
Root	Description of work order update					nitial	Action	Sign &						
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Description	Date	Verification	QC Inspector		
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rocess														
upplier														
raining	1													
Inapproved			<u> </u>											
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Landi	ng (Gear				General		1	r	 -	<u></u>	ا -		
	_	Bending			L	Bend	<u> </u>	Grain		Ovalized		Pressure/Forced		
		Centre No	ot Concer	ntric to (o/s	BOM/Route		Hardwa	•	Over/Under	 	Temperature/Cure		
		Cracks			L	Broken/Damaged		1	on Incomplete	Part Incorre	<u> </u>	Weld		
		Crushed/0	Crimped.			Burrs		4	ions Incomplete/Unclear	Part Lost/M	issing	Wrong Stock Pulled		
	L	Cuffs				Contamination	\perp	Mainte		Part Moved				
		Heat Trea	it		L	Countersink		Mislabe	eled	Positioned \	_	-		
	L	Inspection		Tube	L	Cut Too Short	L	Misread	i [Power Loss,	'Surge	Other		
	L	Ripples in			_	Drill Holes	Offset							
		Torque W	aves in E	xtrusio	n L	Drawing		-	Calibration					
		Turning S	equence		L	Finish		Out of	Sequence					
		Wave/Tw	ist in Tub	oe		Folio		Outside	Outside Dimensions					

DQA: _____Date: ___

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

September-13-12 2:53:02 PM

Work Order ID: 90195 Parent Item: D212-664-207 **Start Date: 9/17/12** Required Date: 10/12/12 Parent Item Name: Crosstube Low Standard Aft Start Qty: 1.00 Required Qty: 1.00 D3595-063-530 No 240 Each 162.0000 Manufactured 12.10.29 RUBBER CUSHION Location Loc Qty Loc Code LG 50 79932 13 82656 37 LG051 73 __87833 73 MAT052 39 63407 67185 70067 18 2 72745 75783 D2940-1 No 240 Each 23.0000 Manufactured *Support Location Loc Oty Loc Code LG052 23 2 79118 82657 20 87921 240 MS21920-28 Purchased No Each 111.0000 Clamp(per MIL-DTL-8783C) Loc Code Location Loc Qty FG B# 123243 105884 5 LG050 38 118713 3 120054 2 122518 33 68 LG051 8 121440 122204 10 122838 50

NCR:	Yes	/	No

DQA: _____ Date: ____

NCR: Y	es / No				WORK ORDER NON-	CONF	UKIN	ANCE / UPL	JAIE	QA Closed:	Date	e:	
Work Orde	r.				DISPOSITION				AGAINST DI	EPARTMENT,	PROCESS		
Part N					Rework Scrap			Skid-tube Aachining	ning Small Fab Prod. Eng. Coor. Qualit				
NCR N	0.				Use-as-is Work Order Update			oforming Large Fab					
Root					•	1	Initial Action			Sign &			
Cause	Date	Step	Qty		or Non-conformance	Chie	f Eng	Descr	ription	Date	Verification	QC Inspector	
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Landir	ng Gear				General								
	Bending				Bend	G	rain			Ovalized		Pressure/Forced	
	Centre N	ot Conce	ntric to	o/s	BOM/Route	Н	ardwa	re		Over/Under	tolerance	Temperature/Cure	
	Cracks				Broken/Damaged	In	specti	on Incomplete		Part Incorre	ct	Weld	
	Crushed/	Crimped			Burrs	lin	struct	ions Incomplete/l	Unclear	Part Lost/M	issing	Wrong Stock Pulled	
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	Heat Trea	at			Countersink	\square	1islabe	led		Positioned \	Wrong		
	Inspection Strip in Tube Cut Too Short				Cut Too Short	M	1isreac	I		Power Loss,	'Surge	Other	
	Ripples in Bend Drill Holes						ffset						
	Torque V	Vaves in I	Extrusio	n	Drawing	Out of Calibration							
	Turning S	equenc <mark>e</mark>	1		Finish	Out of Sequence							
	Turning Sequence Finish						Outside Dimensions						

September-13-12 2:53:02 PM

Work Order ID:

90195

Parent Item:

D212-664-207

Parent Item Name:

Crosstube Low Standard Aft

D3428-1 Placard

Manufactured

No

255

Each

5

5

Loc Code

5.0000

Start Date: 9/17/12

Start Qty: 1.00

Required Date: 10/12/12

Required Qty: 1.00

Nut

Purchased

No

85228

122441

117677

118384

118927

119075

122407

120423 121825

Location

Location

314

ST300

ST042

255

Loc Qty

Loc Qty

486

486

291

25

48

15

3

Each

777.0000

Loc Code

122441



NASJ 149D0663J

Purchased

No

Purchased

120308

Location

ST340

ST342

No

200 255 Each 0.0000

50

50

31

30

255

Loc Qty

Each 81.0000

Loc Code

2

22407







122416 78

										DQA:	Date:	
NCR:	Yes / No				WORK ORDER NON-	CON	NFORM	MANCE / UPE	DATE	QA Closed:	Date:	•
					DISDOSITION	I			A CAUNIST DE	<u>.</u>		
Work Orde	er:				DISPOSITION				AGAINST DE	PAKTIVIENT	PROCESS	
Part I								Crosstube Small Fab	Pro	Engineering Quality		
NCR I	No				Use-as-is Work Order Update			noforming Large Fab	Finishing Composite	Rec/Stor	e/Packaging Supplier	Other
Root				Descri	ption of work order update		nitial	Act	ion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Descr	iption	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												
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	Bending				Bend		Grain			Ovalized		Pressure/Forced
	Centre N	ot Conce	ntric to	o/s	BOM/Route		Hardwa	ire		Over/Under	tolerance	Temperature/Cure
•	Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
	Crushed,	/Crimped	-		Burrs		Instruct	ions Incomplete/L	Jnclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs	Crushed/Crimped. Cuffs			Contamination		Maintenance			Part Moved		_

Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Positioned Wrong

Power Loss/Surge

Other

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

DART AEROSPACE LTD	Work Order:	90195
Description: Crosstube Low Aft (205/212)	Part Number:	D212-664-207
Inspection Dwg: D212-664-247 Rev: B		Page 1 of 1

Min

Max

Required Dimension

	Required Dimension	IVI	n	Max j		
	Height	18.	16	18.42		
	1/2 Span	48.	55	48.81		
	Angle	4	9	52		
	Total Span	97	.1 9	97.62		
	Bending Passes	8				
Į.	Crushing	_	- 6%	6 / 10%		
۰۷٦۶	5+5.397			.442 ! 5	. 396	
	`°06	!		8.19	}	
					<i>6</i>	
	2.916	(I)		2.919		
9.30				2 4))		E.300
	•			S	7.6	
		ļ		<u> </u>	— #	1
P		19 ¢ 17				
V	_ 48.650		48.6		B	

	Side A	w.	ρρω	Side B
Bending Passes	19	u		17
Crushing	8.0%			8.190
	Comment	s	·	
Sine A2 8.0%	crushing Q	19	PASSES	•
MIDDL = 11 PA	-sx,			
Sine B2 6.1%	chushi, a)	17-PA25	
	1		<u> </u>	

77.36011

QC15 Inspection	CAS
Date	16 / 17/10/18
	9-13-17

Rev	Date	Change	Revised by	Approved
Α	08.02.29	New Issue	KJ/JM	
В	10.04.01	Dwg Rev updated	KJ .	
С	12.04.16	Added bending, crushing dimensions	KJ del	un

												DQA:	Da	τe: ַ	
NCR: Y	⁄es	/ No				WORK ORDER NON-C	ON	NFORN	MANCE / UP	DATE	ΩΔ	- \ Closed:		te:	
W 101						DISPOSITION				AGAINST DE					v
Work Orde	-		·			Rework			Skid-tube	Crosstube		Water Jet			Engineering
	Part No				· · · · · ·	Scrap Use-as-is Work Order Update	Therm	Machining noforming Large Fab	Small Fab Finishing Composite	Prod. Eng. Coor. Rec/Store/Packaging Supplier				Quality Other	
NCK	NO					work Order Opdate	J		raige rab	Composite					
Root					•	otion of work order update	l	nitial		tion	1	Sign &			
Cause	\dashv	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription	1	Date	Verification	n	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved															
						F	AUL	T CATE	GORY						
Landi	ng G	iear			• •	General							-		_
	ш	Bending Centre No	nt Concer	ntric to 1		Bend BOM/Route		Grain Hardwa	re		→	valized ver/Under	tolerance	-	Pressure/Forced Temperature/Cure
	${m H}$	Cracks	or concer	iti ic to v		Broken/Damaged		Inspecti	on Incomplete		Pa	rt Incorrec	:t		Weld
	Ш	Crushed/	Crimped			Burrs		Instruct	ions Incomplete/	'Unclear	∐Pa	rt Lost/Mi	ssing		Wrong Stock Pulled
		Cuffs				Contamination		Mainte	nance		Pa	rt Moved			
		Heat Trea	it			Countersink		Mislabe	led		Po	sitioned W	√rong	_	-
		Inspection	n Strip in	Tube		Cut Too Short]Misread	i		Po	wer Loss/	Surge		Other
		Inspection Strip in Tube Ripples in Bend				Drill Holes		Offset			_				

Out of Calibration

Out of Sequence
Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

Item	Qty -247	Qty -247B	Part Number	Description
	Х		D242 CC4 247	CDCCCTUCE ACCEPTED V COSTON CONTROL
<u> </u>			D212-664-247	CROSSTUBE ASSEMBLY (205/212 LOW AFT)
2		x	D212-664-247B	CROSSTUBE ASSEMBLY (214 LOW AFT)
3	1	1	D6008-132	CROSSTUBE
4	_ 2	2	D2940-1 ·	SUPPORT
_5	4	4	D3595-063 530	RUBBER CUSHION
6	2	2	D3660-1	CUFF
. 7	4	4	MS21920-28	CLAMP (OR MS21920-30)
_8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

1) MATERIAL MANUFACTURED FROM D6008-132

FINISHED LENGTH = 128.268±0 020 (BEFORE BENDING/TRIMMING)

FINISH. CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

UNITS: INCHES UNLESS OTHERWISE NOTED. BREAK SHARP EDGES: 0 005 TO 0.010 MAX.

IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF

USING VIBRATING STYLUS. 7) WEIGHT: D212-664-247 = 36 6 lbs (PER IIN-D212-664) D212-664-247B = 36 6 lbs (PER IIN-D212-664)

- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
 9) WHEN MACHINING TAPER, RUN CUTTER OFF PART BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPTUP TO 10% IS ALLOWED IN AREA NOTED.

 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

 12) INSTALL D2940-1 SUPPORT USING 0.03 "TO 0.05" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF

- D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015 LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
 13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1
- SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT. 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS DEFECTS UP TO 0 005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
- 15) TORQUE CLAMPS 80 TO 100 IN-LB ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING
- 16) INSTALL D3660-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT

SHOP COR'S RETURN 14. ENGINEERINY, UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT MOTICE WORK ORDER MLJ NO. 90195 MLJ 12-09-17

DEO ATTACHED

D

500# 11-614 11.07.28 UNDER REVIEW

8			NOTES/PART LIST; UPDATE TO RDS: ADD -247B (ZN C4-2, D5-2)	RF	09.09.30			
Α	NEW I	SSUE		CP	07.07.07			
REV.			DESCRIPTION	BY	DATE			
DESIGN	l	q)	DART AEROSP	ACE	LTD			
DRAWN	DRAWN RF		HAWKESBURY, ONTARIO, CANADA					
CHECK	CHECKED 0		DRAWING NO.		REV. B			
MFG. AF	PPR.	77	D212-664-247	!	SHEET 1 OF 4			
APPRO	VED	10	TITLE	-	SCALE			
DE APP	R.	-#-	CROSSTUBE (205/212 LOW AFT) NT.					
DATE	09.0	9.30	COPYRIGHT © 2007 BY DART / THIS DOCUMENT IS INFINATE AND CONFIDENTIAL AND IS SUPPLY NOT TO BE USED FOR ANY PURPOSE OR COME OR COMEAN WISTTEN PERMISSION FROM DART A	ED ON THE EXPR	FSS CONDITION THAT IT IS			

В

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										DQA:	Date:	
NCR: Y	es / No				WORK ORDER NON-C	O	NFORM	MANCE / UPDATE		•		• •
	•							·	_	QA Closed:	Date:	
					DISPOSITION			AGA	INST DE	PARTMENT	PROCESS	
Work Orde	er:					,		ст. т. — — — — — — — — — — — — — — — — —			Water Jet	1
D	1 -				Rework	1		—	II Fab	Dro	d. Eng. Coor.	Engineering Quality
Part N	NO			 	Scrap Use-as-is	1		~ —	shing		e/Packaging	Other
NCR N	do.				Work Order Update			Large Fab Comp	~	inec/stor	Supplier	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
NCIVI	···				Work Order opdate	J		comp	03.10	l	ouppiic.	ا ا
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Cause	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Description		Date	Verification	QC Inspector
Doc/Data												
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Unapproved						<u>L</u>				<u> </u>		
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Landi				r	General		1			1		7
	—				Bend	_	Grain			Ovalized	_	Pressure/Forced
	Centre Not Concentric to O/S			O/S -	BOM/Route	-	Hardwa		-	Over/Under	 	Temperature/Cure
	Cracks			<u> </u>	Broken/Damaged	\vdash	1	ion Incomplete	<u> </u>	Part Incorre	 	Weld
		/Crimped		<u> </u>	Burrs	_	4	tions Incomplete/Unclear	\vdash	Part Lost/M	issing	Wrong Stock Pulled
				<u> </u>	Contamination	<u></u>	Mainte		-	Part Moved		
	anding Gear Bending Centre Not Concentric to C			i	Countersink	1	Mislabe	eled		Positioned \	Vrong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Power Loss/Surge

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Inspection Strip in Tube

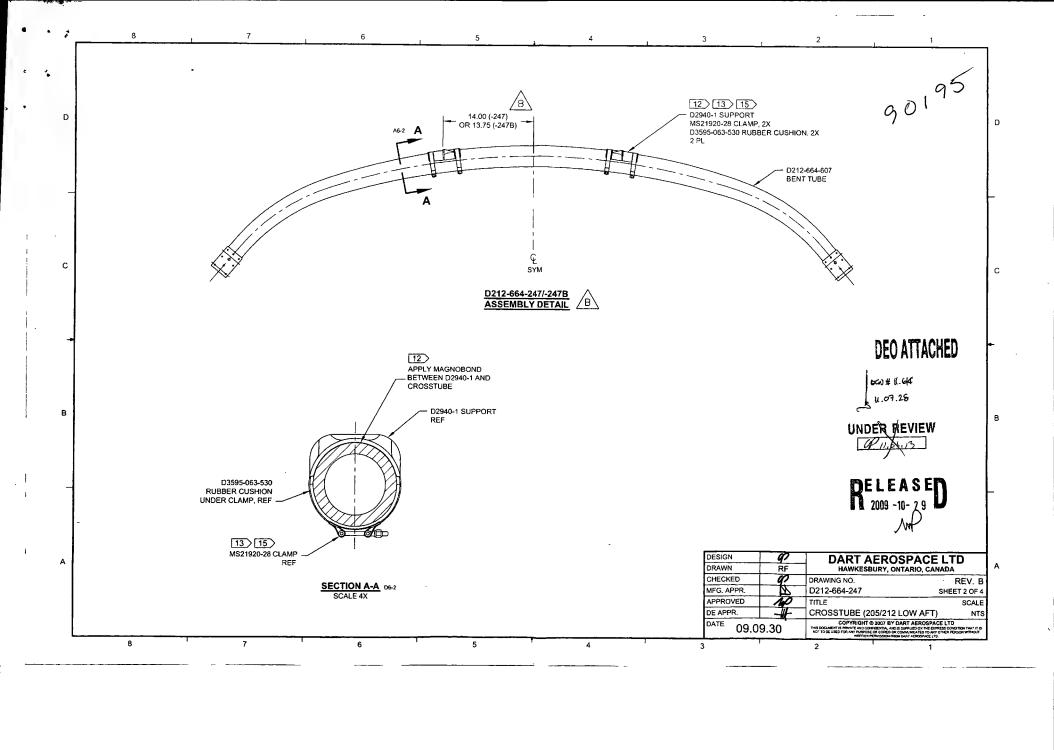
Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish Folio



											DQA:	Dat	e:	
NCR: Y	es / No				WORK ORDER NON-O	O	NFORN	AANCE / UP	DATE					*
											QA Closed:	Dat	:e:	~
Work Orde	ır.				DISPOSITION		:		AGAINST [EF	PARTMENT	PROCESS		
WOIK OIGE	····				Rework	1		Skid-tube	Crosstube	٦		Water Jet		Engineering
Part N	lo.				Scrap	1		Machining	Small Fab	┨	Pro	d. Eng. Coor.	ㅓ	Quality
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NCR N	lo.				Work Order Update	1		Large Fab	Composite			Supplier		
														
Root					ption of work order update	Į.	nitial		tion		Sign &	_		
Cause	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription	_	Date	Verification	יו	QC Inspector
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	Bending				Bend	<u> </u>	Grain				Ovalized			Pressure/Forced
	Bending Centre Not Concentric to O/S			o/s	_BOM/Route		Hardwa	re			Over/Under	tolerance		Temperature/Cure
	Cracks				Broken/Damaged		Inspecti	ion Incomplete			Part Incorre	ct		Weld
	Crushed/	Crimped			Burrs		Instruct	tions Incomplete/	/Unclear		Part Lost/M	issing		Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance			Part Moved			
	Heat Tre	at			Countersink		Mislabe	eled			Positioned \	Vrong		_
	Inspection Strip in Tube				Cut Too Short		Misread				Power Loss,	'Surge		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

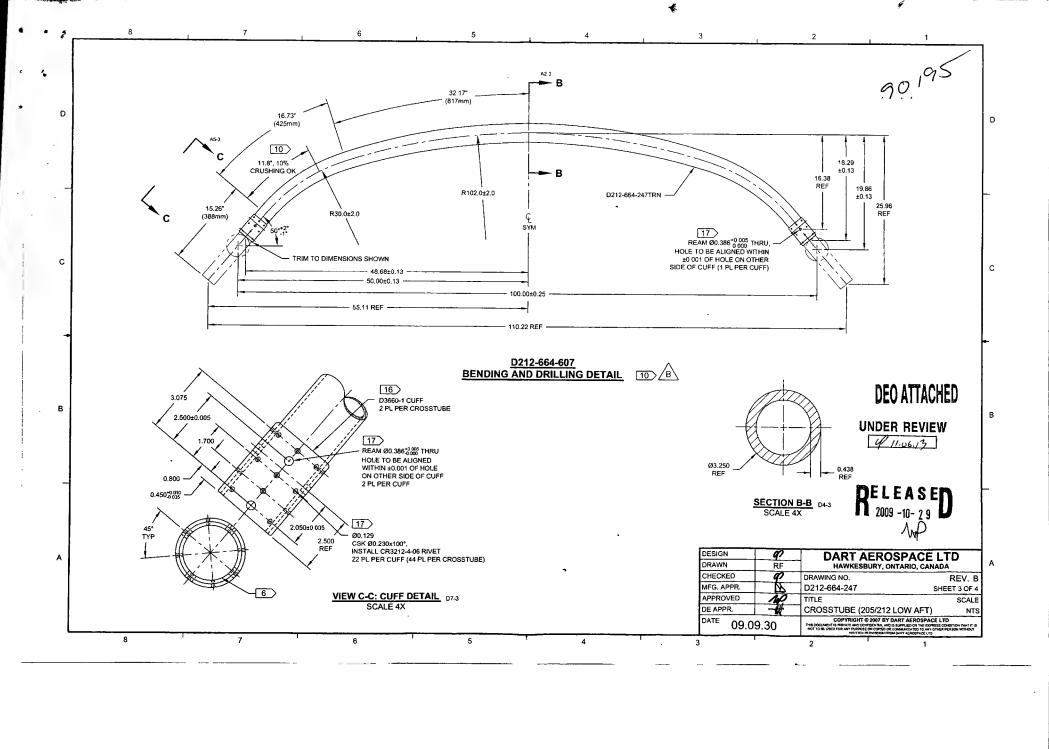
Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish



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											DQA:	Date:	
NCR:	/es	/ No				WORK ORDER NON-O		NFORM	ANCE / UP	DATE	•		*
									,		QA Closed:	Date:	
Mart Ord						DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Work Orde	er: -					Rework	1		Skid-tube	Crosstube	1	Water Jet	Engineering
Davt N	ما					Scrap	-		Machining Vachining	Small Fab	Pro	d. Eng. Coor.	Quality
Part N	NO					Use-as-is	1 1		noforming	Finishing	4	e/Packaging	Other
NCR 1	No.					Work Order Update	1		Large Fab	Composite	1100,3101	Supplier	
NCN	•0					Work order opdate	ן נ			composite	7	3dppe.	
Root					Descri	ption of work order update		nitial	Ac	tion	Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling			1										,
Operator							İ						
Material							ļ						
Setup										ē			
Other]								
Process													
Supplier													
Training													
Unapproved													
						F	AUL	T CATE	GORY				
Landi	ng G	iear				General		_			-		-
Bending		Bend		Grain			Ovalized	L	Pressure/Forced				
		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
		Crushed/	Crimped			Burrs		Instruct	ions Incomplete/	'Unclear	Part Lost/M	issing	Wrong Stock Pulled

Maintenance Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish Folio Part Moved

Positioned Wrong

Power Loss/Surge

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

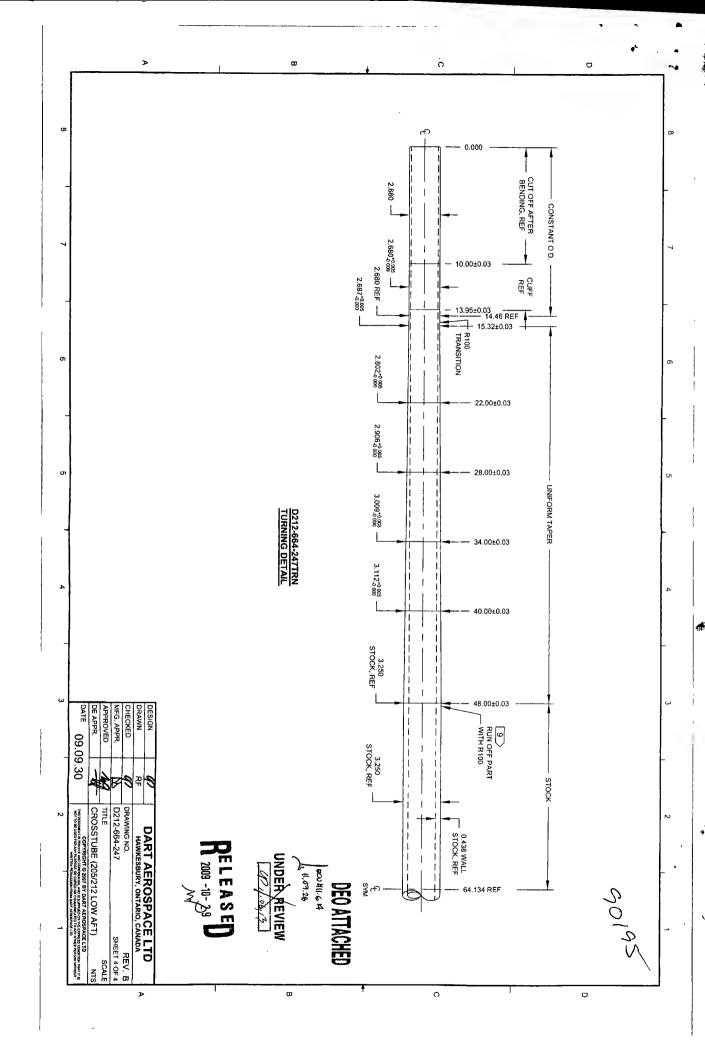
Wave/Twist in Tube

Cuffs

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion



NCR: Y	NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE														
											QA Clo	sed:	Date	e:	
Work Orde	or:				9	DISPOSITION				AGAINST DE	PARTM	IENT/PI	ROCESS		
Part N	-					Rework Scrap			Skid-tube Crosstube Machining Small Fab			Water Jet Prod. Eng. Coor. Rec/Store/Packaging			Engineering Quality Other
NCR N	۱o				<u></u>	Work Order Update				Finishing Composite					Other
Root					Descri	ption of work order update	ı	nitial	Act	ion	Sign	&			
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desci	ription	Dat	te	Verification	4	QC Inspector
Doc/Data Equip/Tooling															
Operator							ļ								
Material															
Setup		i													
Other	Ш						'								
Process	Ш														
Supplier	Ш			,										l	
Training							ļ							-	
Unapproved				<u> </u>	<u> </u>						<u> </u>				
							AUL	T CATE	GORY						
Landi	$\overline{}$					General	_	٠ا		_	Ovalize	. 1	Г		Pressure/Forced
	-	Bending			o./s	Bend BOAA/Boarts	\vdash	Grain			-				·
	-	Centre No Cracks	ot Concei	ntric to	^{0/s} -	BOM/Route Broken/Damaged	\vdash	Hardwa	ire ion Incomplete	<u> </u>		Jnder to correct	nerance	-	Temperature/Cure Weld
	\vdash		الده ساست		-	1	-	1	ion incomplete/ tions Incomplete/	Uncloar	⊣	ost/Miss	ing		Wrong Stock Pulled
	lacksquare	Crushed/Crimped Burrs			Contamination	<u> </u>	Mainte		Unclear	Part N		ing [Wrong Stock Pulled	
	-	Cuffs Heat Trea			-	Countersink	\vdash	Mislabe				ned Wr	ong		
	${f H}$			Tuha	-	Cut Too Short		Misrea		-	-	Loss/Su			Other
				Drill Holes		Offset	u	L_	J' 0WE	2033/30	e. [Other		
	H	Torque W		- - xtrusio	<u> </u>	Drawing	Out of Calibration								
	H	Turning S			" -	Finish	\vdash	-1	Sequence						
			- 40000		i	J		1 ' '							

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING NO.	TITLE	REV. B DART AEF	ROSPACE LTD D.E.O.	NO	AUEST VIA	
D212-664-247	CDOSSTUDE ACCIVIONEL				SHEET NO.	SCALE
	CROSSTUBE ASS'Y (205 LC	W AFT) ENGINEE	RING ORDER D212	-664-247 - B-1	SHEET 1 OF 1	NTS
DRAWN 9	CHECKED A	> MFG. APPR.	APPROVE	o wo	DE APPR.	
DATE 11.07.	15 DATE //. 97	2.20 DATE	1.07.21 DATE	11/ 1/	DATE // 07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL

90195

CHANGE:

IS:

Item	Qty -247	Qty -247B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

		- 45	4)	
9 A	/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2940-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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NCR:	es / No	4.		1	WORK ORDER NON-C	ONFOR	MANCE / UPDATE			♣,
	•	767	•	631				QA Closed:	Date:	
Work Orde	er:			•	DISPOSITION		AGAINST	DEPARTMENT	/PROCESS	
Part No. NCR No.			.:	Rework Scrap Use-as-is Work Order Update	4 1	Skid-tube Crosstube Machining Small Fab noforming Finishing Large Fab Composite	Pro Rec/Sto	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other	
Root				Descripti	on of work order update	Initial	Action	Sign &		
Cause	Date	Step	Qty	orl	Non-conformance	Chief Eng	Description	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved										
		 	· .			AULT CATE	GORY			
Landi	Bending Centre No	ot Conce	ntric to	o/s B	General end OM/Route roken/Damaged	Grain Hardw	are ion Incomplete	Ovalized Over/Under Part Incorre	L	Pressure/Forced Temperature/Cure Weld

Instructions Incomplete/Unclear

Maintenance

Out of Calibration

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

DQA:

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

Part Moved

Wrong Stock Pulled

Other

Date:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Crushed/Crimped

Inspection Strip in Tube

Torque Waves in Extrusion

Heat Treat ...

Ripples in Bend

Cuffs

Burrs

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish



LIQUID PENETRANT TEST REPORT

P- 10176

ACOREN		,				Page	1 OF /
	D +	10		DATE	oct 23 2		AM D PM D
CLIENT		erospace		- "	. P/0 18723	Z I IIVIC	AW CIN C
ATTENTION	CHantele	LINDA, ANDY		•		n5	
ADDRESS		Berdeen st		PO/WO No.	188-12-65		
	HAWKesbu	ing on		WORK LOCATION			
	04-				D. <i>ASH1 1417/a</i>	REV./DAT	E 2005
PROJECT	PT-wet	Vorescent Lig	vid Penc	trunt ins	pection		
ITEM(S) EXAMINED	see Be	dau					
JOB DESCRIPTI	ON	PROCEDURE NO. LT	REV./DATE	2009	TECHNIQUE NO. LT-X	REV./DAT	E 2007
PART NO.				MATERIAL A	uminium/s/s	THICKNESS _	
SCOPE PELL	emed a	wet Flux L.F	L on	100% 01	the extern	el Suit	ace
		mentionned 1					
	y let 5	I-KIN DANGE L	Kiran .				
TEST DETAILS METHOD	DE U	DRESCENT	ISIBLE	WATER WAS	H D SOLVE	NT REMOVABLE	☐ Post EmulsiFIED
FAMILY BRAND	Macneflux		ISIBLE		N 3790 □ OUTPU		
PENETRANT	22-67	MINIMUM DWELL TIME	165 MIN.		☐ FLASHLIGHT ☐ TROU		
PENETRANT REMO		MINIMUM DRY TIME		OTHER	1.000		4904 10
	6K0-62	MINIMUM DWELL TIME	3 0 Min.	LIGHT METER S/	1098866	CAL DUE	E DATE OCT 28 2012
DEVELOPER TYPE		UEOUS AQUEOUS	☐ DRY	1			
TEST SURFACE SURFACE CONDITION		UND AS WEL	DED	☐ MACHINED	☐ SHOT BLASTED		LEAN BARE METAL
	ATURE AS GRO		0°F то 10°C/50°		10°C/50°F TO 52		· 52°C/125°F
RESULTS-	(METRIC	: O IMPERIAL)					
ITEM	COM	MENTS	ACCEPT REJECT			$\times \setminus \times \setminus \times$	
1 0000	Acc DIL FA	IC M + WATO BAY	2	THEM TA	041412042	$\mathbb{Z}^{2}\mathbb{Z}^{2}$	
2 11	•	16 Mount WOID 9034 · WOID 9034			D4141-041		
				13/17/4/11/11/11/20/20/4/2011		2	
4.4	stube	WOID 77282			D212-664-6		
	stube	WO ID-86935		TIEM IO	0212-664-6	OF AFF	
	stube	WOID 90195	00	TEMIN	0212-664-8	OF APT	\times
6 CROS	stube (WOID 90196		ItEM IO	Da12-664-6	WZ AFT	$\times \times \times$
			<u> </u>				
No relevant	indication	was detected As	<i>Des</i>		\times	~~~	
a so Hable	Stendert G	the time of me	spectron		$\rightarrow \leftarrow \rightarrow \leftarrow$		><><
Find 4 to	dire Mak or	neach clevis A	(5)			<u> </u>	
	-				121024		
	by ingeneen						
The agreement of Acuren		vices extends only to those services provide pinion reflect the opinions or observation					
	urian Anuran Group Inc. is	pinion reject the opinions or observation not assuming any responsibilities of the o Inc. In no event shall Acuren Group Inc	owner/onerator and the	e owner/operaior reiains c	omplete responsibility for the engi-	neering, munujaciare, repair	· and use decisions as a result of th
10. 1 100	AT .	nc. uses the degree, care and skill ordina					lo other warranty, expressed or
implied, is made or intend	ded by Acuren Group Inc.						
SIGNATURES							
CLIENT REPRESE	NTATIVE					DTR # E-120	375
Troume:		PRINT		SIGNATURE	REPORT	•	
TECHNICIAN (SIGN	NATUKE).	ac or man			REVIEWE		
NAME (PRINT):	Ale	wandre MKHA	<u> </u>	2 ^{NO} TECHNICIAN	***	NAME	INITIALS
	CGSB	LEVEL III SNT LEVEL	CGSB Li	-	T LEVEL		
		REG. NO 10148	CGSB R	EG. NO			